University of Texas
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ICESAT/GLAS Document:

YXX Release Number Convention

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Version 3.0
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Version 1.0, August 2006
Original document

Version 1.1, October 2006
Added explanation of orbit prediction
Redefined Laser 1a Release 18 as PAD level 2 (218)
Redefined Laser 2a Releases 14, 17 as PAD level 3 (314, 317)
Added YXX translations for all older releases (pre-Release 28)

Version 2.0, February 2009
Added sentence about GLA01 waveform data
Added notes and explanation for equivalency of Release 429 and 529 data

Version 3.0, August 2011
Added details to product descriptions and various format changes.
Added notes and explanation for Release 633 products

YXX Release Number Convention

Data products named Release 27 and earlier used only two digits of a three-digit release number slot (XXX). Beginning with Release 28 (Release Y28), a YXX pattern for release numbers is adopted. The Y-code of this new naming convention ensures that similar POD and PAD procedures have been completed for similarly-named elevation data products (i.e., the higher the three-digit release number, the more calibration has been performed). This change mostly concerns elevation products GLA06 and GLA12-15; although present in other products, the Y-code is a non-issue for other data as the POD and PAD only affect the geolocation of the laser spot. For example, GLA01 waveform data will always retain a Release 1XX designation because they are processed during near-real-time data generation. Elevation data from different campaigns having the same Y-code may not necessarily have the same elevation quality (due to spacecraft instrumentation, orientation, and other factors affecting geolocation), but should be of reasonably similar quality (i.e., globally speaking, all Y-code = 4 data is better than Y-code = 3 data; Y-code = 3 is better than 2; Y-code = 2 is better than 1). For each new release, this Y-code will be assigned by UTCSR.

See the *CSR SCF Release Notes for Orbit and Attitude Determination V3* document for a complete description of POD and PAD procedures, the calibration levels, and corresponding Y-codes for each release of each laser campaign.

Y-code
0 = Predicted orbit; no PAD (for Level 1A products GLA01-GLA04)
1 = POD calibration level 1; PAD calibration level 1
2 = POD calibration level 2; PAD calibration level 2
3 = POD calibration level 2; PAD calibration level 3
4 = POD calibration level 2; PAD calibration level 4
5 = POD calibration level 2; PAD calibration level 4 (quality indicators duplicated to account for revision of Y-code = 4 data; see page 5 for details.)
6 = POD calibration level 3; PAD calibration level 5 (2011 reprocessing)
7-9 = reserved for future

Key
Predicted orbit (forecast)
The satellite ephemeris is predicted 1.5 to 2.5 days in advance for ingestion into I-SIPS processing of Level 1A products. Calibrated POD is never ingested, and hence, for example, waveform products are always Y-code = 0. Positions found on Level 1A data products (e.g., on the waveform plots) are the predicted sub-satellite nadir point, and have no bearing on the true spot location.

POD calibration level 1 (rapid, near real-time)
Initial solution determined using rapid GPS solutions from IGS, rapid NOAA solar flux and geomagnetic indices, and preliminary IERS Earth orientation parameters.

POD calibration level 2 (final)
Solution incorporating final GPS, solar flux, geomagnetic, and Earth orientation products.

POD calibration level 3 (2011 reprocessing)
Solution incorporating various updates and changes applied consistently for the entire mission, including reprocessed IGS GPS orbits and gravity field model. See *CSR SCF Release Notes for Orbit and Attitude Determination V3* for details.

PAD calibration level 1 (rapid, near real-time)
EKF solution using IST and gyro data, but without post-campaign-analysis compensation for IST bracket motion.

PAD calibration level 2 (intermediate)
Includes interim pointing corrections. This is an intermediate step that was used during L1a and is reserved for future testing and analysis.

PAD calibration level 3 (intermediate)
Includes a correction for IST bracket motion (LRS observations, modeled LRS, or an EKF-batch solution model), laser biases, and any other identified corrections.

PAD calibration level 4 (final)
Includes calibration corrections using ocean and RTW scans.

PAD calibration level 5 (2011 reprocessing)
Solution incorporating updated and consistent processing for the entire mission. See *CSR SCF Release Notes for Orbit and Attitude Determination V3* for details.

Release Number Translation for Early GLA Level 1B and Level 2 Products

GLA Level 1B and Level 2 data products generated prior to Release Y28 will not be renumbered because they have been replaced. Elevation products affected are GLA06 (Level 1B) and GLA12-15 (Level 2). Below is a list of elevation products named in the SCF BORG table *(*NSIDC's *The Attributes for ICESat Laser Operations Periods*) and their equivalent YXX release number. If you must use this older data, please use the YXX translation release listed below in any presentation or documentation.

L1a Release 17-18 = 217-218
L1a Release 8-13 = 108-113

L1b Release 8-13 = 108-113

L2a Release 24-26 = 424-426
L2a Release 14-19 = 314-319
L2a Release 12 = 112

L2b Release 26 = 426
L2b Release 22 = 322
L2b Release 15-17 = 115-117

L2c Release 17 = 117

L3a Release 23 = 423
L3a Release 22 = 322
L3a Release 18 = 118

L3b Release 19 = 119

L3c Release 22 = 122

L3d Release 26 = 426
L3d Release 25 = 125

L3e Release 27 = 427
L3e Release 26 = 126

L3f Release 26 = 126

Release Number Translation for Later Fully-Calibrated GLA Products

Release 28 = 428
Release 29 = 429, 529 (equivalent products)
Release 31 = 531
Release 33 = 633 (2011 reprocessing)

PAD Quality Equivalency for Release 429 and 529 Data Products

While ICESat/GLAS data continue to follow the YXX format convention for naming data products, the methods for PAD have evolved since launch in 2003. Procedural details for PAD calibration level 4 (Y-code = 4) were revised and end results improved. Therefore, campaigns that were processed to that level early in the mission were re-examined in conjunction with the GSAS (XX-code = 29) software change. This change in PAD procedures necessitated an increment in the Y-code (to Y-code = 5) for certain campaigns. In summary: Release 428 products were fully-calibrated using the PAD procedures available at the time of each campaign's processing. Data from latter ICESat campaigns were regenerated into Release 429 products without any change in PAD procedures. PAD procedures were re-examined and Release 529 data generated for L2a (Sep-Nov 2003), L2b (Feb-Mar 2004), L3a (Oct-Nov 2004), and L3b (Feb-Mar 2005). Release 429 and 529 data have equivalent PAD calibration.

2011 Reprocessing: Release 633 Data Products

Following R531 generation, a complete reprocessing of all 2 billion laser shots was undertaken. This 2011 reprocessing of the ICESat mission data is the last update for the foreseeable future. The procedures for generating the Release 633 data include updates, corrections, enhancements, and consistent processing for the entire mission. Details can be found in the document *CSR SCF Release Notes for Orbit and Attitude Determination V3.*